

Short Note

## Synthesis of New Schiff Base Ether: *p-n*-(Dimethylamino)-benzylidene-*p*-dodecyloxyaniline

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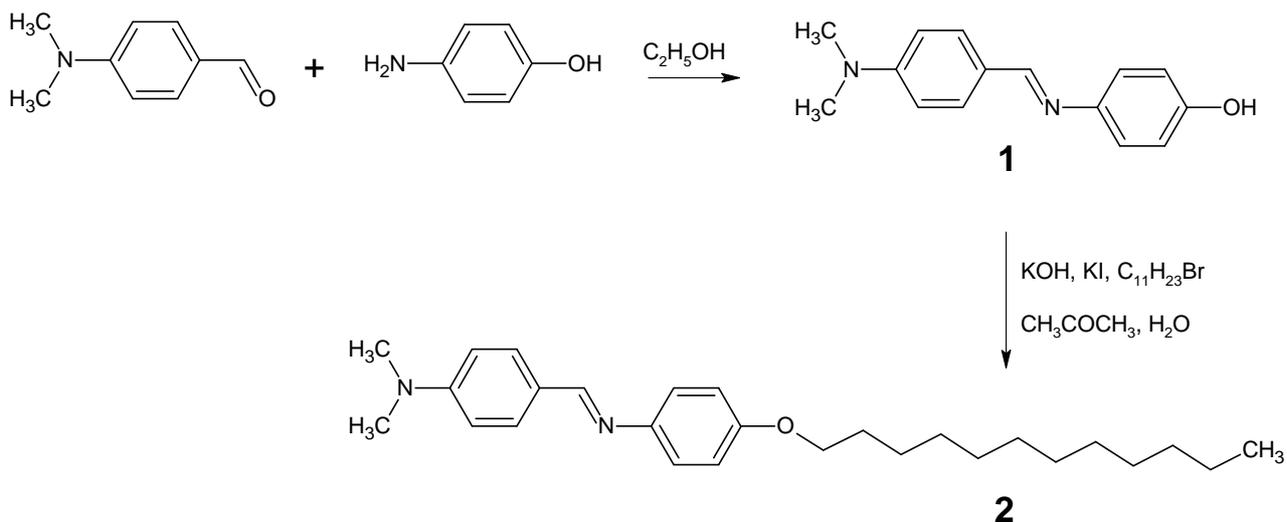
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**Abstract:** A new Schiff base ether, *p-n*-(dimethylamino)benzylidene-*p*-dodecyloxyaniline, was synthesized and its IR, <sup>1</sup>H NMR, <sup>13</sup>C NMR and MS spectroscopic data are reported.

**Keywords:** *p-n*-(dimethylamino)benzylidene-*p*-dodecyloxyaniline, Schiff base, alkyl chain.

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Compounds containing two aromatic rings with terminal substituents or multiple substituents are low-mass molecules capable of exhibiting liquid crystal properties [1]. Typical examples include Schiff base esters consisting of an ester linkage at one end and different substituents residing at the other end along the long molecular axis. As a continuation of our previous investigations [2-9], in this paper we report a new Schiff base ether with a potential to exhibit mesomorphic properties. Due to the presence of the dimethylamino group, this molecule may also serve as a mesogenic charge-transfer donor [10].



A solution of 4-dimethylaminobenzaldehyde (1.19 g, 8 mmol) and 4-aminophenol (0.87 g, 8 mmol) in absolute ethanol (40 mL) was heated under reflux for 3 hours. Compound **1** thus obtained was recrystallized from absolute ethanol. Then, Schiff base **1** (0.48 g, 2.0 mmol) in acetone (40 ml), was added to a solution of potassium hydroxide (0.11 g, 2.0 mmol) in distilled water (10 ml). This was followed by addition of a small amount of potassium iodide into the mixture. The reaction mixture was heated under reflux for an hour upon stirring. 1-Bromododecane (0.75 g, 3.0 mmol) was then added to the flask and reflux was continued for 24 hours. The yellow product obtained was repeatedly recrystallized with absolute ethanol whereupon the pure compound was isolated as a yellow solid (0.43 g, 53%).

Melting Point: 94.5°C.

EI-MS  $m/z$  (rel. int. %): 409 (30)  $[M+1]^+$ , 408(100)  $[M]^+$ , 240 (40), 239 (95).

IR  $\nu_{max}$  (KBr)  $cm^{-1}$ : 2850–2950 (C–H aliphatic); 1611 (C=N); 1592, 1502 (C=C aromatic).

$^1H$  NMR (300 MHz,  $CDCl_3$ ):  $\delta/ppm$  0.90 (t, 3H,  $J = 6.7$  Hz,  $CH_3$ ), 1.29–1.48 (m, 18H,  $CH_3-(CH_2)_9-CH_2-CH_2-O-$ ), 1.80 (qt, 2H,  $J = 7.4$  Hz,  $-CH_2-CH_2-O-$ ), 3.07 {s, 6H, 2 x  $N(CH_3)_2$ }, 3.98 (t, 2H,  $J = 6.6$  Hz,  $-CH_2-O-$ ), 6.74 (d, 2H,  $J = 8.8$  Hz, Ar-H), 6.91 (d, 2H,  $J = 8.7$  Hz, Ar-H), 7.19 (d, 2H,  $J = 8.7$  Hz, Ar-H), 7.76 (d, 2H,  $J = 8.7$  Hz, Ar-H), 8.37 (s, 1H,  $CH=N$ ).

$^{13}C$  NMR (75 MHz,  $CDCl_3$ ):  $\delta/ppm$  14.63 ( $CH_3$ ), 23.17, 26.51, 29.78, 29.83, 29.89, 30.06, 30.08, 30.11, 30.14, 32.38 for methylene carbons  $\{-CH_2\}_{10}CH_2O-$ , 40.65  $\{N(CH_3)_2\}$ , 68.63 ( $-CH_2O-$ ), 111.98, 115.25, 122.40, 124.97, 130.59, 146.08, 152.64, 157.48 for aromatic carbons, 159.04 ( $CH=N$ ).

Elemental analysis: Calculated for  $C_{27}H_{40}N_2O$ : C, 79.36%, H, 9.87%, N, 6.86%; Found: C, 79.40%, H, 9.75%, N, 6.79%.

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## References and Notes

1. Jacobi, A., Weissflog, W. *Liq. Cryst.* **1997**, *22*, 107.
2. Yeap, G.Y.; Ha, S.T.; Lim, P.L.; Boey, P.L.; Mahmood, W.A.K.; Ito, M.M.; Sanehisa, S. *Mol. Cryst. Liq. Cryst.* **2004**, *423*, 73-84.
3. Yeap, G.Y.; Ha, S.T.; Lim, P.L.; Boey, P.L.; Ito, M.M.; Sanehisa, S. and Vill, V. *Mol. Cryst. Liq. Cryst.* **2006**, *452*, 63-72.
4. Yeap, G.Y.; Ha, S.T.; Boey, P.L.; Mahmood, W.A.K.; Ito, M.M.; Youhei, Y. *Mol. Cryst. Liq. Cryst.* **2006**, *452*, 73-90.
5. Yeap, G.Y.; Ha, S.T.; Lim, P.L.; Boey, P.L.; Ito, M.M., Sanehisa, S.; Youhei, Y. *Liq. Cryst.* **2006**, *33*, 205-211.
6. Ha, S.T., Ong, L.K.; Win, Y.F.; Koh, T.M.; Yeap, G.Y. *Molbank* **2008**, *3*, M582.
7. Ha, S.T.; Ong, L.K.; Win, Y.F.; Koh, T.M.; Yeap, G.Y. *Molbank* **2009**, *1*, M584.
8. Ha, S.T.; Ong, L.K.; Win, Y.F.; Koh, T.M.; Yeap, G.Y. *Molbank* **2009**, *1*, M585.
9. Ha, S.T.; Ong, L.K.; Win, Y.F.; Koh, T.M.; Yeap, G.Y. *Molbank* **2009**, *1*, M591.
10. Narasimhaswamy, T., Srinivasan, K.S.V. *Liq. Cryst.* **2004**, *31*, 1457-1462.

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